

The Relation Between Elementary Students' Recreational and Academic Reading Motivation, Reading Frequency, Engagement, and Comprehension: A Self-Determination Theory Perspective

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Research indicates the need to further examine the dimensions of reading motivation. A clear theoretical basis is necessary for conceptualizing reading motivation and considering contextual differences therein. The present study develops and validates the SRQ-Reading Motivation, a questionnaire measuring recreational and academic reading motivation based on self-determination theory. The study clarifies the relation among reading motivation, reading self-concept, reading behavior (i.e., engagement and frequency), and reading performance (i.e., comprehension). Participants included 1,260 Flemish fifth-grade students and their 67 teachers. Exploratory and confirmatory factor analyses indicated that both recreational and academic reading motivation comprise 2 factors: autonomous and controlled motivation. This factor structure was found to be invariant across boys and girls. Comparisons of the SRQ-Reading Motivation with subscales of the Motivation for Reading Questionnaire provide evidence for the construct validity of the instrument. Structural equation modeling confirmed that recreational autonomous reading motivation is associated with more positive reading behavior and better performance. In the academic setting, only the equivalent relationship between autonomous reading motivation and leisure-time reading frequency could be corroborated. In this respect, the results confirm the independent contribution of recreational autonomous reading motivation and reading self-concept to reading behavior and performance. No significant indirect relationship between reading motivation and reading comprehension through reading frequency or reading engagement was found. The theoretical and practical significance of the present study is discussed.

Keywords: reading motivation, self-determination theory, reading engagement, reading frequency, reading comprehension

An overwhelming number of leisure activities are available for the young generation today, challenging teachers and parents to keep children motivated to read (Majid & Tan, 2007). This is of critical importance because the amount of time spent reading predicts reading achievement and knowledge of the world (Cox & Guthrie, 2001; Guthrie, Wigfield, Metsala, & Cox, 1999). Unfortunately, research indicates that reading motivation declines as children grow older (Guthrie & Wigfield, 2000; Van Elsäcker & Verhoeven, 2003) and this trend sets in at the end of elementary school (Chapman & Tunmer, 1997; Guthrie & Davis, 2003; Unrau & Schlackman, 2006).

An in-depth understanding of the concept of reading motivation is essential to keep children motivated to read and to promote

reading motivation. Previous studies defined reading motivation as “the individual’s personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading” (Guthrie & Wigfield, 2000, p. 405), indicating that children can be motivated to read for a variety of reasons. Although research on children’s reading motivation has grown steadily over the past decade (e.g., Guthrie & Wigfield, 2000), a further examination of the dimensions of reading motivation has been recommended (Baker & Wigfield, 1999; Watkins & Coffey, 2004; Wigfield, Wilde, Baker, Fernandez-Fein, & Scher, 1996). At present the multidimensionality of reading motivation is most frequently studied by means of the Motivation for Reading Questionnaire (MRQ; Wigfield & Guthrie, 1995, 1997), which is the most commonly used questionnaire in this field. However, Watkins and Coffey (2004) have found that there is “a lack of support for the proposed structure of the MRQ” (p. 116). Furthermore, this instrument is based on an accumulation of different motivation theories and motivational constructs, implying that no univocal theoretical frame of reference serves as the basis for the MRQ.

However, an underlying unambiguous theory of motivation is certainly needed to gain an in-depth understanding of children’s reasons for getting involved in an activity (Reeve, 2009). Therefore, a substantiated choice should be made. A motivation theory that has demonstrated its value in the field of education (e.g., Reeve, 2002; Vansteenkiste, Lens, & Deci, 2006) and language

This article was published Online First April 2, 2012.

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This research was supported by a grant from the Special Research Fund of Ghent University (Bijzonder Onderzoeksfonds Universiteit Gent).

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learning (e.g., Noels, Pelletier, Clement, & Vallerand, 2000) is self-determination theory (SDT). One characteristic of SDT is that it qualitatively differentiates between different types of motivation. In particular, SDT revises the classical distinction between intrinsic and extrinsic motivation by differentiating among types of extrinsic motivation (i.e., external, introjected, and identified motivation), which are situated along a continuum of self-determination or relative autonomy (Ryan & Connell, 1989; Ryan & Deci, 2000). In this respect, SDT provides a clear structure for identifying different autonomous (i.e., intrinsic and identified) and controlled reasons (i.e., introjected and external) for acting. Although this distinction between autonomous and controlled types of motivation has rarely been adopted in previous studies on reading motivation, recent research has shown promising results (Guay et al., 2010). Furthermore, SDT has been primarily used to study motivational dynamics among adolescents (e.g., Soenens & Vansteenkiste, 2005) and has been tested far less with elementary school children. The present study is innovative in its application of SDT to explore reading motivation in late elementary school children.

Another aspect that has been often overlooked in reading-motivation research is that different motivational dynamics might occur in recreational and academic contexts (McKenna & Kear, 1990). In other words, qualitatively different reasons or motives for reading may be important in children's leisure-time reading (recreational context) or reading activities at school and for their homework (academic context). The present study takes these contextual differences into account.¹

The need for a further examination of children's reasons for reading, the promising theoretical framework of SDT for conceptualizing and operationalizing reading motivation, and the lack of attention paid to contextual differences in reading motivation led to our first aim in the present study, namely, the development and validation of a questionnaire measuring recreational and academic reading motivation, grounded in SDT. To further our understanding of the concept of reading motivation and its significance for reading performance, the second goal in the present study was to clarify the relationships among reading motivation, reading behavior (i.e., reading engagement and frequency), and reading performance (i.e., reading comprehension). Although several studies have been carried out in this area (e.g., Connell & Wellborn, 1991; Guthrie et al., 1999, 2007; Skinner, Wellborn, & Connell, 1990; Taboada, Tonks, Wigfield, & Guthrie, 2009; Van Elsäcker, 2002), the relationships remain rather ambiguous. Moreover, self-concept is included as an additional predictor in the present study, because reading motivation is expected to explain reading behavior and performance above and beyond reading self-concept (e.g., Durik, Vida, & Eccles, 2006; Katzir, Lesaux, & Kim, 2009; Skinner et al., 1990). We argue, following SDT, that to clarify these relationships it is crucial to take into account the quality or type of motivation for reading (e.g., Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009).

Autonomous and Controlled Motivation

Within SDT (Deci & Ryan, 2000; Ryan & Deci, 2000), both autonomous and controlled types of motivation are distinguished. Autonomous motivation consists of intrinsic and well-internalized regulation. *Intrinsic motivation* is the prototype of fully auto-

nous or self-determined behavior and therefore represents the most optimal type of motivation. It refers to engaging in an activity for its own enjoyment or inherent satisfaction, and reflects "the inherent tendency to seek out novelty and challenges" (Ryan & Deci, 2000, p. 70). In the case of reading, this implies that children read because they enjoy it. Nevertheless, even when children lack spontaneous interest in reading (i.e., when they are extrinsically motivated), a certain level of autonomy or volition is still possible. If children consider reading as personally relevant or identify themselves with the value of reading, their tendency to engage in reading activities has been internalized. As a result, they experience a sense of psychological freedom when reading, and this type of motivation is named *identified regulation*.²

Controlled motivation equally consists of two subtypes: external regulation and introjected regulation. *External regulation* is the most controlled type of extrinsic motivation and consequently the least autonomous. When externally regulated, children read to meet external demands, to obtain a reward, or to avoid punishment. Their teachers, parents, or significant others pressure them into reading. For instance, when children are allowed to watch TV only after they have read a chapter of a book, they are said to be externally regulated in their reading. Such pressure does not always come from external causes but can also originate in internal demands, which are buttressed with feelings such as guilt, shame, or pride. This type of motivation, caused by internal pressure, is called *introjected regulation*. For instance, when a boy reads a book because he would feel like a "good boy" only if he does so, he is displaying introjected regulation.

It should be noted that external, introjected, and identified regulation all represent a particular form of extrinsic motivation, as the reading behavior is instrumental in each of these cases. Yet, only identified regulation is more autonomous in nature, and external and introjected regulation are more coercive. Hence, the critical distinction within SDT is not the differentiation between intrinsic and extrinsic motivation but that between relatively more controlled and relatively more autonomous types of motivation (Ryan & Connell, 1989; Ryan & Deci, 2000). The MRQ (Wigfield & Guthrie, 1995, 1997) seems to be grounded primarily in the intrinsic-extrinsic motivation distinction, as scales considering internal pressure (i.e., introjected regulation) and the perceived personal significance of reading (i.e., identified regulation) seem not to be present.

¹ Some authors refer to reading for entertainment and reading for study as different purposes for reading (e.g., Linderholm & van den Broek, 2002). Although these broader purposes can be conceived of as "reasons," they represent more abstract and higher order goals for reading. In that respect, they differ from the more dynamic reasons for reading to which SDT attends, which are said to differ in terms of quality (i.e., autonomous relative to controlled; Sheldon & Vansteenkiste, 2005). The present study focuses on these different motivation types, which can be assessed in both recreational and academic contexts (e.g., "I read in my free time because I think reading is interesting"; "I read for school because I think reading is interesting"). In this respect, the context in which children read or complete reading assignments cannot be regarded as equal to children's reasons for reading.

² Integrated regulation or fully internalized identified regulation was not considered in the present study as it is difficult to measure, especially in elementary school children (Brickell & Chatzisarantis, 2007).

Autonomous motivation has been consistently associated with more positive outcomes, including greater long-term persistence (e.g., Pelletier, Fortier, Vallerand, & Brière, 2001), more self-regulated learning (e.g., Vansteenkiste, Zhou, Lens, & Soenens, 2005), enhanced conceptual understanding (e.g., Benware & Deci, 1984), and more psychological well-being (e.g., Niemiec et al., 2006). In contrast, controlled motivation has been found to be predictive of dropout (e.g., Vallerand, Fortier, & Guay, 1997), superficial learning (e.g., Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005), and ill-being (e.g., Levesque, Blais, & Hess, 2004). However, these findings have been primarily obtained among those in middle to late adolescence (e.g., Soenens & Vansteenkiste, 2005) and have been studied far less in younger age groups.

In the present study, we examined the association between autonomous and controlled reading motivation and reading behavior (i.e., reading frequency and engagement) and performance (i.e., reading comprehension measured by a standardized test). We expected that autonomous reading motivation would contribute more positively to reading behavior and performance than would controlled reading motivation. In addition, we explored whether reading frequency and reading engagement could account for the hypothesized relation between reading motivation and performance.

Understanding the Relation Between Reading Motivation and Reading Performance: The Role of Reading Frequency and Engagement

Research in late elementary school indicates that reading motivation has an important relation with children's reading amount and frequency (Guthrie et al., 1999; Wigfield & Guthrie, 1997). Cox and Guthrie (2001) further refined this relationship, pointing out that reading motivation contributes more to the amount of leisure-time reading than to the amount of reading for school. In addition, Guthrie et al. (1999), along with Anderson, Wilson, and Fielding (1986), revealed that reading frequency significantly predicts reading comprehension. Consequently, Guthrie et al. (1999) stated that "one of the major contributions of motivation to text comprehension is that motivation increases reading amount, which then increases text comprehension" (p. 250). In a recent study Becker, McElvany, and Kortenbruck (2010) corroborated that the relation between intrinsic reading motivation and reading literacy is mediated by reading amount.

It should be noted, however, that several studies report a direct relationship between reading motivation and reading performance as well (Guthrie et al., 2006, 2007; Sweet, Guthrie, & Ng, 1998; Taboada et al., 2009; Unrau & Schlackman, 2006; Van Elsäcker, 2002; Wang & Guthrie, 2004). Indeed, Wang and Guthrie (2004) found that intrinsic reading motivation has a positive relationship with reading comprehension and that extrinsic motivation has a negative association. Furthermore, in contrast to Becker et al. (2010), Wang and Guthrie (2004) indicated that reading amount did not mediate the relation of intrinsic or extrinsic reading motivation with reading achievement.

Given that reading frequency has received mixed evidence as an explanatory mechanism in the relation between reading motivation and comprehension and that previous research has not yet examined the qualitatively different types of motivation as distinguished

by SDT, the present study further examines this issue. We investigate whether the hypothesized positive association between reading motivation and reading comprehension can be accounted for by reading frequency, as autonomously motivated readers are likely to invest extra time in reading. On the other hand, reading frequency might not play such an explanatory role in the case of controlled motivation, as such readers might only read when they feel pressured to do so.

Although controlled motivation might put pressure on an individual to read somewhat more, the tension and pressure characteristics of controlled motivation will likely forestall a committed engagement in reading activities. Consequently, the quality of reading investment (rather than its quantity) might be lower when children are motivated for controlled reasons. Therefore, we examine reading engagement as a potential additional mediator in the relation between reading motivation and reading comprehension. Engagement refers to the quality of behavioral involvement (e.g., students' attention and effort) and emotional involvement (e.g., positive emotion) during learning activities (Fredricks, Blumenfeld, & Paris, 2004; Skinner, Kindermann, & Furrer, 2009; Skinner et al., 1990) and serves as a behavioral pathway between students' motivational processes and their reading performance (Connell & Wellborn, 1991; Skinner et al., 1990). Indeed, Wigfield et al. (2008) emphasized that reading engagement is crucial to reading comprehension. In this respect, we hypothesize that whereas autonomous reading motivation contributes positively to engagement, controlled motivation is negatively related to it. Thus, it is possible that a qualitatively better reading engagement will predict better reading comprehension.

Next to the relations between reading motivation, frequency, engagement, and comprehension, research indicates that self-concept positively contributes to engagement (Skinner et al., 1990), leisure-time-spent reading (Durik et al., 2006), and reading comprehension skills (Chapman & Tunmer, 1995; Katzir et al., 2009). Following the Progress in International Reading Literacy Study (PIRLS), the present study defines self-concept as a child's perception of his or her own reading competency (Martin, Mullis, & Kennedy, 2007). Because self-concept and autonomous and controlled motivation are expected to make independent contributions to reading engagement, reading frequency, and reading comprehension, we included reading self-concept as an additional predictor in the present study.

The Present Study

We believe that the present study is innovative in a number of ways. This study extends previous SDT research by adopting SDT in research on elementary school children and by considering contextual differences in reading motivation (i.e., recreational vs. academic). Moreover, although numerous SDT-based studies relied solely on self-report measures, the present study also used more objective indicators of reading comprehension as assessed through standardized tests and engagement as rated by teachers. This study builds on the literature on reading motivation (a) by applying SDT to conceptualize and operationalize reading motivation, (b) by studying the critical role of the quality of motivation (i.e., autonomous and controlled motivation), and (c) by examining whether reading engagement, in addition to reading frequency,

might play a mediating role in the relation between motivation and reading comprehension. The study pursued the following aims.

First, we aimed to develop and validate a questionnaire measuring recreational and academic reading motivation, grounded in SDT. Following the SDT literature, which started with the work of Ryan and Connell (1989), the instrument is called the Self-Regulation Questionnaire–Reading Motivation (SRQ–Reading Motivation). According to SDT, reading motivation is hypothesized to consist of autonomous (i.e., intrinsic and identified regulation) and controlled motivation (i.e., introjected and external regulation). Moreover, consistent with previous research showing that girls are more autonomously motivated for schooling in general (e.g., Vansteenkiste et al., 2009) and have a more favorable motivation to read in particular (e.g., Swalander & Taube, 2007; Wigfield & Guthrie, 1997), girls were expected to be more autonomously motivated.

Second, to increase our understanding of reading motivation, we aimed to clarify the relationship between reading motivation and reading self-concept on the one hand and among reading engagement, reading frequency, and reading comprehension on the other hand. In line with reading research (e.g., Taboada et al., 2009; Van Elsäcker, 2002; Wang & Guthrie, 2004) and SDT (Deci & Ryan, 2008), academic and recreational autonomous reading motivation were expected to result in more positive reading behavior (i.e., reading frequency and engagement) and better reading performance (i.e., reading comprehension), whereas controlled reading motivation was expected to yield a negative relation with reading engagement and performance. As for reading frequency, it is well possible that controlled motivation would yield a positive, albeit less strong, relation, as children might engage in some reading when feeling pressured to do so. Moreover, we examined whether reading self-concept as well as autonomous and controlled reading motivation contributed independently to reading frequency, reading engagement, and reading comprehension (Chapman & Tunmer, 1995; Deci & Ryan, 2000; Durik et al., 2006; Katzir et al., 2009; Skinner et al., 1990; Taboada et al., 2009; Van Elsäcker,

2002). An indirect relationship between reading motivation and reading comprehension via reading frequency (which we consider an indicator of the amount of children's reading investment; Guthrie et al., 1999) and/or reading engagement (which we regard as a qualitative indicator of children's reading investment; Connell & Wellborn, 1991; Skinner et al., 1990) is hypothesized. Findings of such an indirect relationship would suggest that part of the reason why autonomous motivation is associated with better reading comprehension test scores is that it contributes to more frequent reading and/or because it adds to a more engaged involvement in reading. The hypothesized theoretical model is summarized in Figure 1.

Method

Participants and Procedure

In the present study, 1,260 fifth-grade students from 45 middle-class, average-achieving elementary schools throughout Flanders (Belgium) participated. Participants consisted of 50.5% girls and 49.5% boys. Children were on average 10.46 years old ($SD = 0.63$). The majority of the students were native Dutch speakers, which is the language of instruction in Flanders. Only an average of 10.14% ($SD = 14.10$) of the students in each school spoke a minority language (Turkish, Moroccan, Arabic, or other).

Prior to the study a passive informed consent was provided to the students' parents, giving them an opportunity to refuse their child's participation. Questionnaires and standardized reading comprehension tests were administered by a trained team of three researchers during regular class periods. Instructions and practice items were provided prior to the actual questionnaire and reading comprehension test. Registration periods were scheduled in three nonsuccessive periods (before and after the morning break and after lunch) to optimize students' concentration and to avoid cognitive overload.

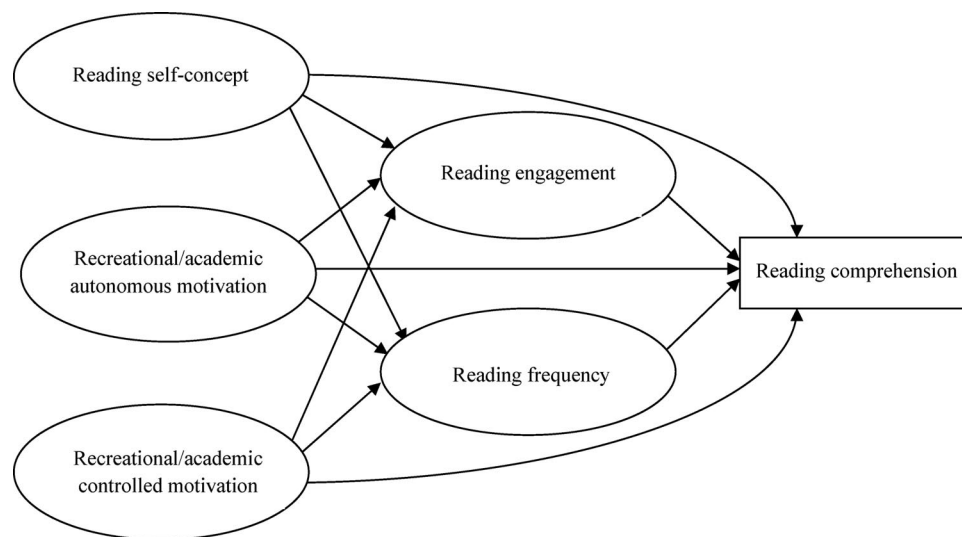


Figure 1. Hypothesized theoretical model relating recreational/academic reading motivation and reading self-concept to reading behavior and performance.

Educational Context

Elementary education in Flanders comprises six consecutive years of study, starting at the age of 6. In each grade, a class teacher is responsible for teaching the main part of the curriculum (usually with the exception of physical education). Reading instruction focuses on understanding, describing, structuring, and judging information from various sources (e.g., timetables, poems, letters, stories) as determined in the governmental attainment targets or minimum objectives. At the end of elementary education, children who have achieved the curriculum targets receive a certificate of elementary education. There is no entrance examination to pass to secondary school (from 12 till 18 years).

Measures

SRQ-Reading Motivation. Based on the SDT (Ryan & Deci, 2000), the SRQ-Reading Motivation questionnaire was developed to capture two autonomous types of reading motivation, intrinsic regulation (e.g., “I read because I enjoy reading”) and identified regulation (e.g., “I read because I think reading is meaningful”), and two controlled types of reading motivation, introjected (e.g., “I read because I will feel guilty if I don’t do it”) and external regulation (e.g., “I read because others oblige me to do so”). The original item pool of 24 items was constructed inspired by previous SDT-based studies (e.g., SRQ-Academic: Ryan & Connell, 1989; Soenens & Vansteenkiste, 2005) and was reviewed by four experts (in the field of SDT, reading research, or research in elementary education), resulting in minor modifications. Each of the 24 items was administered twice: motivation for recreational reading on the one hand (e.g., “I read in my free time, because it is important for me to read”) and motivation for academic reading on the other hand (e.g., “I read for school, because it is important for me to read”; McKenna & Kear, 1990). Academic reading was defined as reading at school and for homework. Both sets of items were randomly ordered and administered separately. Items were scored on a 5-point Likert scale, ranging from 5 (*agree a lot*) to 1 (*disagree a lot*).

The original item pool of the SRQ-Reading Motivation was pilot tested in two classes. This pilot test focused on the comprehensibility of the questionnaire for late elementary school children. Ten students were interviewed to verify whether the items were understood as intended by the researchers, resulting in some small changes in wording.

MRQ. To validate the SRQ-Reading Motivation, students completed eight (of the 11) subscales of the MRQ (Baker & Wigfield, 1999). The eight selected subscales are the most frequently used categories of the MRQ (Guthrie et al., 1999, 2007; Guthrie, Wigfield, & VonSecker, 2000). Researchers administered measures of students’ competence and efficacy beliefs (subscales: Self-Efficacy, “the belief that one can be successful at reading,” and Challenge, “the willingness to take on difficult reading material”) and their intrinsic–extrinsic motivation and goals (intrinsic subscales: Curiosity, “the desire to read about a particular topic of interest to the child”; Involvement, “the enjoyment experienced from reading certain kinds of literary or informational texts”; and Importance [attached to reading]; extrinsic subscales: Recognition, “the pleasure of receiving a tangible form of recognition for success in reading”; Grades, “the desire to be favorably

evaluated by the teacher”; and Competition, “the desire to outperform others in reading”; Baker & Wigfield, 1999, p. 452–455). Reading work avoidance was not considered, since it was identified as a mere technical factor (Watkins & Coffey, 2004). All items of the selected MRQ-subscales were included and presented in the same order as mentioned in the study of Baker and Wigfield (1999). In accordance with previous MRQ studies (Baker & Wigfield, 1999; Wigfield & Guthrie, 1995, 1997), items were scored on a 4-point Likert scale, ranging from 4 (*agree a lot*) to 1 (*disagree a lot*).

Baker and Wigfield (1999) validated the MRQ in their study with separate confirmatory factor analyses on each category. The structure of the intrinsic–extrinsic motivation and goals subscales resulted in a moderate fit, $\chi^2(309) = 612.10$, $p < .001$, goodness of fit index (GFI) = .89, Tucker–Lewis index (TLI) = .88. The structure of the competence and efficacy beliefs subscales had an acceptable fit, $\chi^2(62) = 114.04$, $p < .001$, GFI = .96, TLI = .92.

Reading performance. In the present study, reading performance was operationalized by means of a standardized reading comprehension test of Schoolloopbanen in het basisonderwijs (schooling from kindergarten till elementary school) developed for fifth grade (Hendriks, Cortois, Verachtert, & Van Damme, 2009). The test consisted of two versions varying in difficulty, each containing seven short narrative or informational texts (between 13 and 66 lines) on themes such as charity, forest fire, and otters, followed by 35 multiple choice questions. The teacher assigned the simple or more difficult version of the test to the students based on their previous reading comprehension results. Both versions of the test had a high internal consistency ($\rho = .82$; Bentler, 2009). Because both test versions are calibrated by means of item response theory (IRT), the test results have been transposed into comparable IRT scores (range 0 to 100).

Leisure-time reading frequency. The student questionnaire from PIRLS (Martin et al., 2007) served as the basis for our measure to assess students’ reading frequency during leisure time. PIRLS is a large international comparative study of the reading literacy of young students. Four items adapted from PIRLS were used to measure the frequency of narrative and informational reading activity in leisure time (e.g., “I read stories or novels”; “I read books that explain things”). The items were answered on a 4-point Likert scale, ranging from 4 (*always*) to 1 (*never*). The internal consistency of the subscale was moderate ($\rho = .62$; Bentler, 2009).

Reading engagement. To assess students’ reading engagement, teachers rated each of their students on five items, respectively evaluating students’ attention, effort, verbal participation, persistence, and positive emotion in reading activities. Each item was scored on a bipolar format, with the engagement indicators scored as 7 (e.g., “This student has a focused attention during reading activities”; “This student is participating verbally during reading activities”) and the disaffected indicators scored as 1 (e.g., “This student’s attention is dispersed during reading activities”; “This student remains silent during reading activities”; Reeve, Jang, Carrel, Jeon, & Barch, 2004). In accordance with previous research (Reeve et al., 2004), the five-item scale had a high internal consistency ($\rho = .90$; Bentler, 2009).

Reading self-concept. Students’ perceptions of their own reading competencies were measured by means of the reading

self-concept subscale of the PIRLS student questionnaire (Martin et al., 2007), consisting of four items (e.g., "Reading is very easy for me"). This student questionnaire was developed through an intensive process of reviews, a field test, and revision of the field-test questionnaire within the scope of PIRLS. Items were scored on a 5-point Likert scale, ranging from 5 (*agree a lot*) to 1 (*disagree a lot*). Responses for negative statements were reverse coded. Reliability analysis indicated an acceptable internal consistency ($\rho = .59$; Bentler, 2009).

Data Analysis

All statistical analyses were conducted with SPSS 18 and R 2.13, lavaan package 0.4-10 (<http://lavaan.org>). With respect to the first research aim, we performed exploratory factor analyses (EFA) using maximum-likelihood extraction and promax rotation in SPSS in order to investigate the structure of the SRQ-Reading Motivation. To examine the stability of the exploratory factor structure, we conducted confirmatory factor analyses (CFA) using R, lavaan package. A random split-half approach was adopted by performing EFA on the first split-half data set ($n = 629$) and CFA on the second data set ($n = 613$). Measurement invariance across gender and gender differences were

also studied. The subscales of the MRQ (Baker & Wigfield, 1999) were compared to evaluate the construct validity of the SRQ-Reading Motivation. Model-based internal consistency coefficients (Bentler, 2009) were computed for each subscale of the SRQ-Reading Motivation.

With respect to the second research aim, structural equation modeling (SEM) was performed with R, lavaan package, to examine the relationships between reading motivation and reading self-concept on the one hand and among reading engagement, frequency, and comprehension on the other hand. Bootstrapping was conducted to test the indirect, mediating effect of reading frequency and engagement between reading motivation and reading comprehension.

Because data were not normally distributed, a maximum likelihood estimation and a Yuan–Bentler (YB) scaled chi-square test statistic for nonnormality were applied in CFA and SEM (Yuan & Bentler, 2000). All data available were used applying casewise maximum likelihood (Wothke, 1998). Following the recommendations of Hu and Bentler (1999) and Kline (2005), (a) the chi-square test statistic and the p value, (b) the root-mean-square error of approximation (RMSEA), (c) the standardized root-mean-square residual (SRMR), and (d) the

Table 1
Standardized Parameter Estimates of the Exploratory Factor Analyses on the SRQ-Reading Motivation: A Two-Factor Model

Item	Pattern matrix			
	Recreational context		Academic context	
	Autonomous motivation	Controlled motivation	Autonomous motivation	Controlled motivation
1	.89	-.15	.87	-.17
2	.90	-.15	.88	-.17
3	.83	-.16	.76	-.07
4	.76	-.14	.81	-.11
5	.57	.10	.63	.07
6	.86	-.06	.87	-.08
7	.82	-.02	.81	-.01
8	.75	.11	.74	.09
9	.75	.09	.77	.02
10	.70	.17	.68	.15
11	.52	.22	.57	.24
12	.50	.34	.54	.30
13	.00	.66	-.03	.59
14	-.05	.68	-.01	.68
15	.08	.60	-.01	.66
16	.09	.57	.15	.53
17	.12	.55	.19	.50
18	.17	.52	.24	.48
19	.23	.39	.13	.54
20	.03	.68	.03	.65
21	-.05	.67	-.07	.65
22	-.10	.64	-.08	.52
23	-.19	.58	-.25	.58
24	-.11	.49	-.11	.60
Eigenvalues	7.39	5.03	7.58	4.88
%	30.78	20.96	31.59	20.33

Note. Target loadings are in boldface. % refers to the percentage of variance explained by the factor. SRQ = Self-Regulation Questionnaire.

comparative fit index (CFI) are presented. For RMSEA, a cutoff value close to .06 is required for a relatively good fit (Hu & Bentler, 1999), and a value lower than .08 indicates a reasonable model fit (Schreiber, Nora, Stage, Barlow, & King, 2006). Furthermore, Hu and Bentler (1999) recommended a value close to .08 for SRMR. In addition, CFI has a cutoff value close to .95 (Hu & Bentler, 1999). With regard to the differences between models of invariance, changes in CFI of .01 or less indicate that the invariance hypothesis should not be rejected (Cheung & Rensvold, 1999).

Results

Development and Validation of the SRQ-Reading Motivation

Factor analyses. EFA were conducted on the first split-half data set ($n = 629$) to examine the structure of the SRQ-Reading Motivation. The items for recreational and academic reading motivation were analyzed separately. Bartlett's test of sphericity, which was equal to $\chi^2(276) = 7,685.13$, $p < .001$ and $\chi^2(276) =$

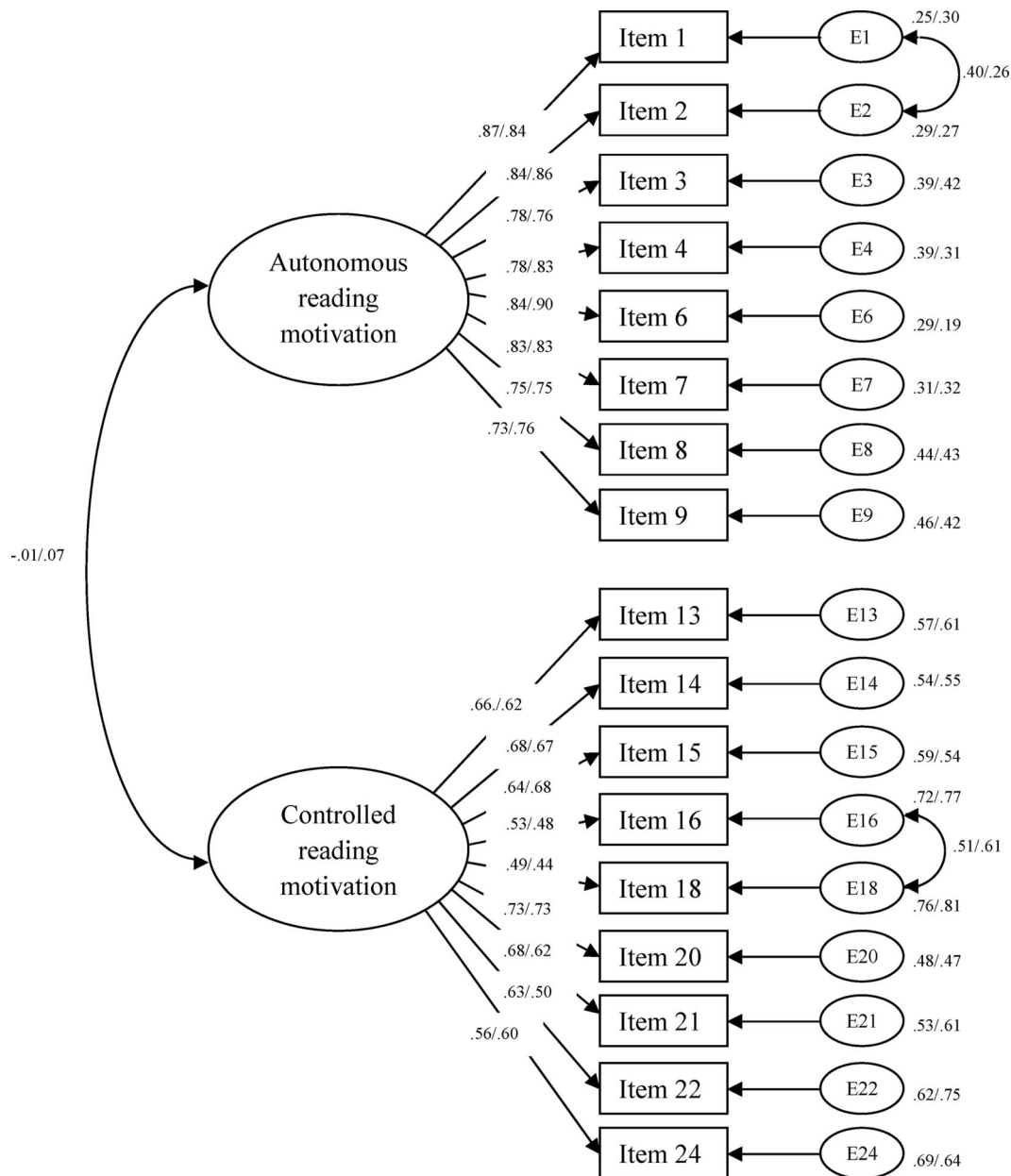


Figure 2. Standardized parameter estimates from the confirmatory factor analyses on the SRQ-Reading Motivation. Estimates are presented for recreational and academic reading motivation respectively. All parameters are significant at the .001 level, except for the correlation between autonomous and controlled reading motivation, which is not significant ($p = .829$ and $p = .242$ respectively). SRQ = Self-Regulation Questionnaire.

7,885.00, $p < .001$, and the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, with a result of 0.93 and 0.93 respectively, guaranteed that the correlation matrices were suitable for exploratory factor analysis. Scree-plot analyses in SPSS and parallel analyses in R (with the 95th percentile as the comparison baseline and a number of random data sets of 1,000) revealed two clearly interpretable factors in both contexts. This two-factor model respectively accounted for 51.74% and 51.92% of the total item variance of recreational and academic reading motivation. Factor loadings revealed a clear two-factor structure for both contexts, respectively representing autonomous reading motivation (combining the items of intrinsic and identified regulation) and controlled reading motivation (combining the items of introjected and external regulation). The magnitude of the factor loadings was satisfactory; loadings on target factors ranged from .39 to .89. Pattern coefficients are displayed in Table 1. Pattern and structure coefficients were similar, and the correlation between the factors (autonomous and controlled reading motivation) was limited in both the recreational and the academic context.

To study the stability of the exploratory factor structure, we conducted CFA on the second data set ($n = 613$), analyzing the items for recreational and academic reading motivation respectively. The model for recreational reading motivation revealed a modest model fit, $YB \chi^2(251) = 1,094.19$, $p < .001$, RMSEA = .07, with 90% CI [.070, .078], SRMR = .10, and CFI = .86.

Based on high modification indices (implying loadings on both factors), theoretical relevance, and wording of the items, a reduction of items was performed in a systematic way, leading to a reduction from 24 to 17 items. Fit indices were examined at each step. For example, Item 5 (“I read in my free time because I think reading is challenging”) and Item 19 (“I read in my free time because I will feel bad about myself if I don’t do it”) were deleted, as these items loaded quite highly on both autonomous and controlled reading motivation. Especially the word *challenge* and the construction “I will feel bad about myself” raised questions during the administration of the questionnaires and thus were perhaps too difficult for fifth-grade students. Furthermore, Item 17 (“I read in my free time because I want others to think I am a good reader”) was left out, because this item loaded on the autonomous reading motivation subscale as well. We believe that the part “I am a good reader,” which is an indication of perceived competence, caused distraction. Therefore, its higher association with autonomous reading motivation is not surprising.

A correlation between the error terms of two items regarding autonomous motivation (i.e., “I read in my free time because I really like it” and “I read in my free time because it’s fun to read”) and two items regarding controlled motivation (i.e., “I read in my free time because I have to prove myself that I can get good reading grades” and “I read in my free time because I can be proud of myself if I get good reading grades”) was allowed, taking into account the similar content of both pairs of items. The changes resulted in a modified model with an acceptable fit, $YB \chi^2(116) = 310.71$, $p < .001$, RMSEA = .05, with 90% CI [.046, .059], SRMR = .06, CFI = .95.

The original model for academic reading motivation revealed a modest model fit, $YB \chi^2(251) = 1,187.29$, $p < .001$, RMSEA = .08, with 90% CI [.074, .082], SRMR = .10, and CFI = .85. The

Table 2

Descriptive Statistics and Internal Consistency Coefficients, Subscales of SRQ-Reading Motivation, Reading Frequency, Engagement, Comprehension, and Self-Concept

Scale	<i>M</i> (<i>SD</i>)	Bentler’s ρ
Recreational context		
Autonomous motivation	3.63 (0.99)	.93
Controlled motivation	2.21 (0.67)	.81
Academic context		
Autonomous motivation	3.60 (1.02)	.94
Controlled motivation	2.60 (0.77)	.82
Reading frequency ^a	2.83 (.70)	.62
Reading engagement ^b	4.72 (1.41)	.90
Reading comprehension ^c	50.73 (5.72)	.82
Reading self-concept ^d	3.58 (.81)	.59

Note. ρ (Bentler, 2009) was calculated on the sample as a whole ($n = 1,260$). SRQ = Self-Regulation Questionnaire.

^a Four-point Likert scale. ^b Seven-point Likert scale. ^c Item response theory scores ranging from 0 to 100. ^d Five-point Likert scale.

modifications of the model were matched to the recreational reading motivation model, so equivalent items remained and two corresponding correlations between error terms were allowed. The fit indices of the adapted model indicated an acceptable fit, $YB \chi^2(116) = 330.34$, $p < .001$, RMSEA = .06, with 90% CI [.049, .061], SRMR = .07, and CFI = .95.

Figure 2 presents the structure and standardized parameter estimates for both models. The final set of items of the SRQ-Reading Motivation can be found in the Appendix.

Reliability analyses were performed to evaluate the model-based internal consistency (Bentler, 2009) of the recreational and academic reading motivation subscales. As shown in Table 2, the internal consistency of the scales was acceptable to good.

As presented in Table 3, pairwise correlations indicated a high significant correlation between autonomous reading motivation in the recreational and in the academic context and between controlled reading motivation in both settings.

Measurement invariance and gender differences. Invariance testing was performed to determine whether the measurement model of the SRQ-Reading Motivation is invariant across boys and girls (Vandenberg & Lance, 2000). The baseline model tested for equivalent factor structure (i.e., configural invariance). Subsequent models tested more conservative restrictions, that is, weak (equal loadings) and strong (equal loadings and intercepts) invariance. Based on the small changes in CFI, strong invariance was found (Cheung & Rensvold, 1999; see Table 4), allowing valid comparisons of latent means across gender. Significantly higher scores were observed for girls on recreational as well as academic autonomous reading motivation (standardized factor score = .49, $p < .001$; standardized factor score = .52, $p < .001$, respectively). Recreational and academic controlled reading motivation were equal across gender ($p = .070$ and $p = .461$, respectively).

Construct validity. The hypothesized eight-factor model of the MRQ (self-efficacy, challenge, curiosity, involvement, importance, recognition, grades, and competition) showed a moderate model fit, $YB \chi^2(637) = 2,557.83$, $p < .001$, RMSEA = .05, with 90% CI [.047, .051], SRMR = .06, and CFI = .86. Examination

Table 3

Correlations Between Subscales of SRQ-Reading Motivation, Reading Frequency, Engagement, Comprehension, and Self-Concept

Variable	1	2	3	4	5	6	7	8
Recreational context								
1. Autonomous motivation	—							
2. Controlled motivation	.03	—						
Academic context								
3. Autonomous motivation	.87**	.06	—					
4. Controlled motivation	.08*	.65**	.09*	—				
5. Reading frequency	.60**	.13**	.60**	.16**	—			
6. Reading engagement	.23**	-.10**	.18**	-.06	.19**	—		
7. Reading comprehension	.28**	-.32**	.19**	-.11**	.14**	.49**	—	
8. Reading self-concept	.37**	-.22**	.31**	-.13**	.28**	.27**	.38**	—

Note. SRQ = Self-Regulation Questionnaire.

* $p < .01$. ** $p < .001$.

of the modification indices suggested adaptations to improve the fit, leading to an eight-factor model with four indicators per factor, except for importance, which had two indicators in accordance with the original MRQ (Baker & Wigfield, 1999). A correlation between the error terms of two items regarding reading competition (i.e., “I try to get more answers right than my friends” and “I am willing to work hard to read better than my friends”) was allowed, as both items refer to competition between friends. The modified model showed a slightly better, albeit not completely satisfying, fit, $YB \chi^2(376) = 1,432.49$, $p < .001$, RMSEA = .05, with 90% CI [.045, .050], SRMR = .05, and CFI = .89. The model-based internal consistency of the different subscales was acceptable to good, ranging from $\rho = .67$ to $\rho = .76$ (Bentler, 2009).

Table 5 presents several significant pairwise correlations between the subscales of the SRQ-Reading Motivation and the MRQ, pointing to convergent validity. As expected, both recreational and academic autonomous reading motivation had moderate to strong positive correlations with involvement, challenge, and curiosity. Furthermore, particular subscales of the SRQ-Reading Motivation were hardly related to the MRQ subscales (e.g., controlled reading motivation and involvement, autonomous reading motivation and competition), indicating discriminant validity and thus contributing to the construct validity of the SRQ-Reading Motivation.

Descriptive results. In order to describe recreational and academic reading motivation in fifth grade, we computed the

means and standard deviations for the SRQ-Reading Motivation subscales. The results are summarized in Table 2. The subscale mean scores ranged from 1 to 5, with a higher score indicating stronger motivation. The means and standard deviations for reading frequency, reading engagement, reading comprehension, and reading self-concept are also reported.

Testing the Hypothesized Model of the Relationships Among Reading Motivation, Behavior, and Performance

Structural equation modeling was applied to test the theoretically hypothesized models relating recreational and academic reading motivation and reading self-concept to reading engagement, reading frequency, and reading comprehension. With the exception of reading comprehension (which is an IRT-based score), all variables in both models were entered as latent constructs.

Both the recreational and the academic reading motivation model showed an acceptable fit to the data that supported the predictive validity of the SRQ-Reading Motivation: $YB \chi^2(416) = 1,477.60$, $p < .001$, RMSEA = .05, with 90% CI [.043, .047], SRMR = .06, CFI = .94; $YB \chi^2(416) = 1,500.89$, $p < .001$, RMSEA = .05, with 90% CI [.043, .048], SRMR = .06, CFI = .94, respectively. The results of the models, including recreational reading motivation on the one hand and academic reading moti-

Table 4

Measurement Invariance Testing on SRQ-Reading Motivation: Summary of Goodness of Fit Statistics

Measurement invariance tests	YB χ^2	df	p	CFI	RMSEA	Comparison	$\Delta YB \chi^2$	Δdf	p	ΔCFI
Recreational context										
Configural invariance (Model 1)	448.982	232	.000	.95	.06					
Weak invariance (Model 2)	473.896	247	.000	.95	.06	Model 1 vs. Model 2	24.80	15	.053	.002
Strong invariance (Model 3)	496.466	262	.000	.95	.05	Model 2 vs. Model 3	21.18	15	.131	.002
Academic context										
Configural invariance (Model 1)	466.336	232	.000	.94	.06					
Weak invariance (Model 2)	480.179	247	.000	.94	.06	Model 1 vs. Model 2	10.94	15	.757	.000
Strong invariance (Model 3)	510.359	262	.000	.94	.05	Model 2 vs. Model 3	30.42	15	.010	.004

Note. SRQ = Self-Regulation Questionnaire; $YB \chi^2$ = Yuan—Bentler chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root-mean-square error of approximation.

Table 5
Correlations for Subscales of SRQ-Reading Motivation With Subscales of the MRQ

MRQ	Recreational context		Academic context	
	Autonomous motivation	Controlled motivation	Autonomous motivation	Controlled motivation
Involvement	.61**	.02	.60**	.09*
Challenge	.59**	.08*	.62**	.14**
Curiosity	.45**	.24**	.53**	.25**
Importance	.34**	.34**	.40**	.31**
Self-Efficacy	.50**	.11**	.51**	.16**
Recognition	.40**	.16**	.45**	.18**
Competition	.07	.32**	.09*	.31**
Grades	.17**	.40**	.24**	.36**

Note. SRQ = Self-Regulation Questionnaire; MRQ = Motivation for Reading Questionnaire.

* $p < .01$. ** $p < .001$.

vation on the other hand, are summarized in Figure 3 and Figure 4, respectively.³

Recreational autonomous and controlled reading motivation as well as self-concept made independent contributions to reading behavior and performance. Recreational autonomous reading motivation in particular was more positively associated with reading frequency, engagement, and comprehension, but controlled reading motivation was not significantly related to reading engagement and even yielded a significantly negative relation with reading comprehension. Surprisingly, academic autonomous and controlled reading motivation were significantly related to reading frequency only. Corresponding to the recreational model, autonomous reading motivation in particular had a strong positive association with reading frequency. The recreational and academic model accounted for 37% and 33% of the variance in reading comprehension respectively, 11% and 10% of the variance in reading engagement, and 65% and 61% of the variance in reading frequency.

As for the mediation of the relationship between reading motivation and comprehension through reading behavior, both the recreational and the academic SEM model suggested no indirect relationship between reading motivation and reading comprehension via reading frequency. Interestingly, reading frequency did not relate significantly to reading comprehension even when reading engagement was excluded from the models. With regard to the mediation between reading motivation and comprehension through engagement, only the recreational SEM model indicated its importance. However, an additional mediation analysis via bootstrapping could not confirm a significant indirect effect of reading engagement on the association between recreational autonomous reading motivation and reading comprehension ($p = .108$). In a second additional mediation analysis, evaluating the recreational SEM model without reading frequency, the mediation between recreational autonomous reading motivation and reading comprehension through reading engagement was also not corroborated ($p = .144$).

Discussion

Keeping children motivated to read, and thus stimulating leisure-time reading frequency (Guthrie et al., 1999; Wigfield &

Guthrie, 1997) and promoting academic reading performance (Taboada et al., 2009; Van Elsäcker, 2002), remains a challenge for teachers and parents alike. Further exploration of the concept of reading motivation within the recreational as well as the academic context is therefore recommended in the literature (Baker & Wigfield, 1999; McKenna & Kear, 1990; Watkins & Coffey, 2004; Wigfield et al., 1996). In this respect, SDT (Deci & Ryan, 2000; Ryan & Deci, 2000) provides us with an interesting theoretical framework to conceptualize reading motivation. The present study was designed to develop and validate a questionnaire measuring fifth graders' reading motivation (SRQ-Reading Motivation), based on SDT, in both recreational and academic contexts. In addition, we studied the relationship among reading motivation, self-concept, behavior, and performance to further our understanding of reading motivation and its importance.

Development and Validation of the SRQ-Reading Motivation

The results of the present study demonstrated that the SRQ-Reading Motivation, grounded in SDT (Deci & Ryan, 2000; Ryan & Deci, 2000), can be seen as a reliable and valid questionnaire to measure late elementary school students' reading motivation in both recreational and academic contexts in Flanders. With regard to its structure, exploratory and confirmatory factor analyses pointed out that reading motivation comprises autonomous and controlled reasons for reading. This corresponds to the types of motivation theoretically distinguished within SDT, confirming the relevance of adopting SDT in the domain of reading motivation, particularly for late elementary school students. In this respect, autonomous reading motivation refers to engaging in reading activities for their own enjoyment or because of their perceived personal significance and meaning, whereas controlled reading motivation refers to participating in reading activities to meet internal feelings of pressure (e.g., guilt, shame, or pride) or comply with an external demand, obtain a reward, or avoid punishment. The present study, however, did not confirm a further differenti-

³ In both models, regression coefficients were equivalent across boys and girls.

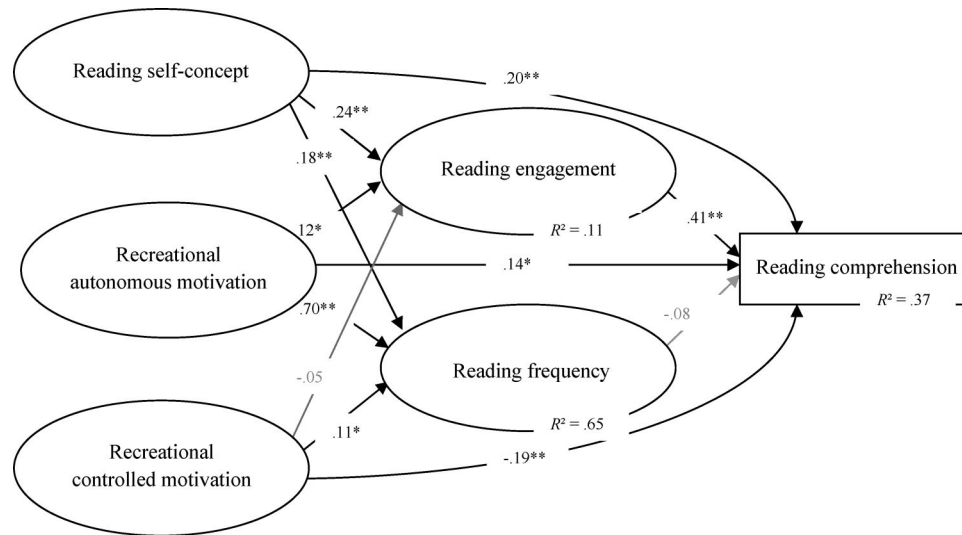


Figure 3. Standardized parameter estimates of the model relating recreational reading motivation and reading self-concept to reading behavior and performance. * $p < .01$. ** $p < .001$.

ation between particular autonomous (i.e., intrinsic and identified) and controlled (i.e., introjected and external) reasons for reading.

Furthermore, the measurement model of the SRQ-Reading Motivation was found to be invariant across boys and girls. As the assumption of strong invariance was met, we were able to compare gender differences in latent means. In accordance with previous studies (Baker & Wigfield, 1999; Swalander & Taube, 2007; Wigfield & Guthrie, 1997), girls showed a more favorable motivation to read: In both the recreational and academic contexts, girls reported significantly higher autonomous reading motivation.

The pairwise correlations between autonomous and controlled reading motivation and the subscales of the MRQ (Baker & Wigfield, 1999) point to the convergent validity of the instrument. As expected, the MRQ subscale Involvement was positively cor-

related with autonomous reading motivation because both involve enjoyment in reading or intrinsic motivation, which is the prototype of fully autonomous behavior. Intrinsic motivation was also typified by Ryan and Deci (2000) as a tendency to look for novelty and challenges. Consequently, the positive correlation between the MRQ subscale Challenge and autonomous reading motivation corresponds with this definition. The MRQ subscale Curiosity (i.e., the desire to read about interests) correlated positively with autonomous reading motivation as well, because reading out of curiosity makes reading personally valuable. In contrast, the MRQ subscale Competition in reading was more related to controlled reading motivation, because the desire to outperform others involves a certain level of pressure and control. Furthermore, some subscales of the SRQ-Reading Motivation had an expected limited

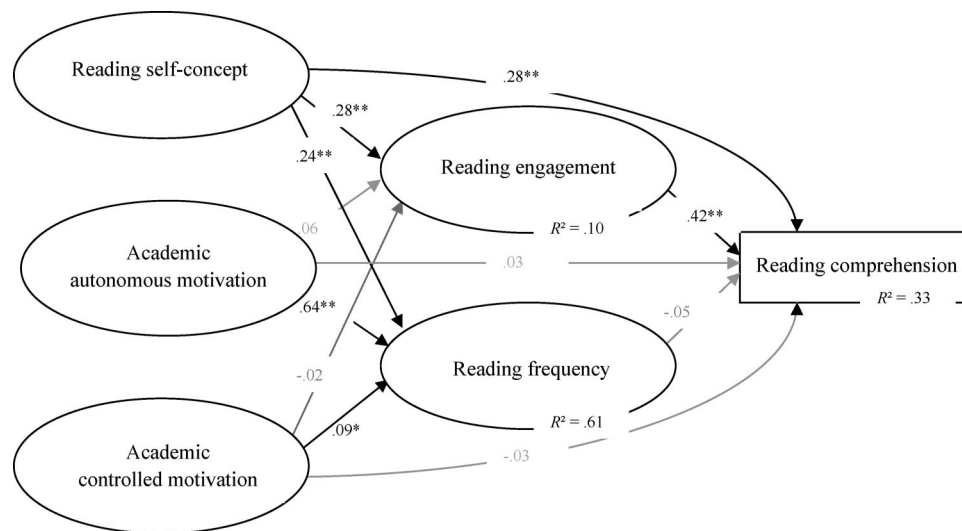


Figure 4. Standardized parameter estimates of the model relating academic reading motivation and reading self-concept to reading behavior and performance. * $p < .01$. ** $p < .001$.

association with the MRQ subscales (e.g., controlled reading motivation and Involvement, autonomous reading motivation and Competition), indicating discriminant validity and thus demonstrating the construct validity of the SRQ-Reading Motivation.

Testing the Hypothesized Model of the Relationships Among Reading Motivation, Behavior, and Performance

Both SEM models designed to test the hypothesized theoretical model had an acceptable fit to the data and supported the predictive utility of the SRQ-Reading Motivation. In terms of the relationships among reading motivation, behavior, and performance, the present study confirms that recreational autonomous and controlled reading motivation, as well as reading self-concept or perceived reading competence, make independent contributions to reading behavior (i.e., reading engagement and frequency) and performance (i.e., reading comprehension; Chapman & Tunmer, 1995; Deci & Ryan, 2000; Durik et al., 2006; Skinner et al., 1990; Taboada et al., 2009; Van Elsäcker, 2002). Consistent with previous findings (Chapman & Tunmer, 1995; Durik et al., 2006; Katzir et al., 2009; Skinner et al., 1990), a more positive reading self-concept is associated with higher leisure-time reading frequency, qualitatively higher reading engagement, and better reading comprehension. Moreover, autonomous and controlled reasons for reading add to explain reading behavior and performance above and beyond reading self-concept. This especially underlines the importance of reading motivation in understanding and encouraging children's involvement in reading activities and development of reading comprehension skills. With regard to the academic context, a corresponding relationship between academic reading motivation and reading self-concept on the one hand and leisure-time reading frequency on the other hand can be observed. In this academic context, the relation between reading self-concept and reading comprehension is clearly more prominent.

The relationship between students' autonomous and controlled reading motivation on the one hand and their reading behavior and performance on the other hand is more strongly visible in the recreational (instead of the academic) reading context. In line with previous reading research (e.g., Connell & Wellborn, 1991; Cox & Guthrie, 2001; Taboada et al., 2009; Van Elsäcker, 2002; Wang & Guthrie, 2004) and SDT (e.g., Deci & Ryan, 2008; Niemiec et al., 2006; Vansteenkiste, Zhou, et al., 2005), students' recreational autonomous reading motivation related to higher leisure-time reading frequency, qualitatively higher reading engagement, and better reading comprehension than controlled reading motivation. In other words, students spend more of their leisure time on reading, are more deeply and attentively engaged in reading, and perform better on a standardized reading comprehension test when they read for their own enjoyment or believe it is personally relevant than when they feel internally or externally pressured to read in their free time. This stresses the significance of qualitatively differentiating the concept of reading motivation in autonomous and controlled reading motivation and, hence, further confirms the value of the SRQ-Reading Motivation. Interestingly, recreational controlled reading motivation had a significantly negative association with reading comprehension, suggesting that the experience of internal or external pressure in leisure-time reading is negatively related to reading comprehension performance. Nevertheless, it

could also be the case that poor readers experience the "push" to read because parents and teachers (have to) frequently urge them to read during leisure time.

For the relationship among academic reading motivation, reading behavior, and performance only a significant positive relationship between autonomous reading motivation and reading frequency could be corroborated. Consequently, both recreational and academic autonomous reading motivation appear to have a positive association with leisure-time reading frequency. A significant direct relationship between academic reading motivation on the one hand and reading engagement and comprehension on the other hand could not, however, be confirmed. The absence of these relationships was unexpected, taking into account the high correlation between autonomous reading motivation in the recreational and academic context on the one hand and the academic nature of the teacher rating of reading engagement and the reading comprehension test on the other hand. It could be the case that reading self-concept dominated the relationship with reading engagement and comprehension and, hence, restrained the occurrence of significant relationships with academic reading motivation. Therefore, the relation among academic reading motivation, self-concept, engagement, and comprehension should be subject to more in-depth research.

To further clarify the relation between reading motivation and performance, the present study tested whether this relation was mediated by reading frequency (i.e., a quantitative indicator of children's reading time; Becker et al., 2010; Guthrie et al., 1999) and/or reading engagement (i.e., a qualitative indicator of reading investment; Connell & Wellborn, 1991; Skinner et al., 1990; Wigfield et al., 2008). A SEM model containing both reading frequency and reading engagement did not corroborate the hypothesized indirect relationships. To further shed light on these relationships and to make conditions more comparable to previous research (e.g., Becker et al., 2010; Guthrie et al., 1999; Wigfield et al., 2008), we performed two additional analyses evaluating the mediating role of reading frequency on the one hand and reading engagement on the other hand.

With regard to reading frequency, even an additional analysis without reading engagement did not confirm that the relationship between reading motivation and performance was mediated by children's leisure-time reading frequency (Becker et al., 2010; Guthrie et al., 1999). Consistent with research of Wang and Guthrie (2004) and Van Elsäcker (2002), the pathway between reading frequency and reading comprehension was not significant. This confirms that reading a lot is not necessarily related to effective reading comprehension skills for elementary students (Hartman, 2001; Pressley & Allington, 1999). In particular, some students might lack skills and strategies (e.g., inferring the meaning of new vocabulary, activating prior knowledge, and adjusting reading speed) that would help them develop their reading comprehension.

With respect to reading engagement, the SEM model in the recreational domain indicated that autonomous reading motivation was positively associated with teachers' ratings of students' engagement on the one hand and that reading engagement was positively related to students' reading comprehension on the other hand. However, the relationship between recreational autonomous reading motivation and reading comprehension appeared not to be significantly mediated by students' reading engagement and this indirect effect remained insignificant even when reading frequency

was excluded from the model. The rather strong association between teachers' rating of students' reading engagement and students' reading comprehension performance is in line with previous research of Guthrie et al. (2007) and Wigfield et al. (2008), which emphasizes that motivation and engagement are crucial to comprehension. Nevertheless, this raises the question of whether teachers especially consider students with high reading comprehension scores as more engaged in reading activities and positively motivated to read (Sweet et al., 1998). Therefore, registering reading motivation from the perspective of the students is significant, as they have most direct insight in the different types of motivation that initiate their reading behavior.

The development of the SRQ-Reading Motivation is of theoretical and empirical significance, because SDT has rarely been applied in the context of reading motivation research before, has rarely been studied among elementary school children, and based on our results appears to be transferable and relevant to this research area and age group. Furthermore, the instrument is useful for teaching practice, as it allows teachers to (a) grasp individual differences in students' reasons for reading, (b) follow up students' evolution in reading motivation throughout the school year, and (c) evaluate reading promotion interventions. Moreover, SEM underlines the importance of reading motivation because qualitatively different reasons for reading (i.e., autonomous and controlled motivation) add to explain reading behavior and performance above and beyond students' reading self-concept. In addition, the SEM models in the present study especially highlight the importance of the quality of motivation (i.e., autonomous vs. controlled motivation) in the recreational context, because more autonomous reading motivation is associated with more positive reading behavior and performance. This implies that interventions to promote reading motivation should primarily focus on encouraging autonomous reasons for reading or enhancing students' willingness to read. In this respect affording choices, offering rationale, recognizing interests, and offering help and support are promising reading promotion strategies (Reeve, 2002; Skinner & Belmont, 1993). These reading promotion interventions not only have the potential to break through the declining trend in reading motivation throughout children's educational career but will further help us to create a positive reading climate. The results will be more qualitative reading behavior and better reading performance, which are indispensable to function in today's society.

Limitations and Further Research

Five limitations related to the present study should be acknowledged. First, notwithstanding the fact that the SRQ-Reading Motivation was successfully validated in a large and diverse sample of fifth-grade students, further research should be performed to confirm the validity of the SRQ-Reading Motivation across national and international educational contexts. In follow-up studies the target group could be enlarged to all grades of late elementary school (i.e., fourth, fifth, and sixth grade) and supplemented with in-depth qualitative research (e.g., interviews and reading diaries). Second, a well-known issue related to the administration of self-report measures is social desirability. What alleviates this concern in the present study is the fact that the means of the different subscales varied substantially and were rather moderate. This suggests that children did not show a tendency to try to come

across as motivated readers while completing the questionnaire. Moreover, the results were comparable to previous research. Combining self-report measures, interviews as well as observer ratings of teachers, parents, or librarians could further tackle this issue, as was attempted in this study by including a teacher rating of reading engagement. Third, in our conceptualization of reading motivation we did not intend to be comprehensive by listing all possible underlying reasons for reading. Instead we tried to develop a questionnaire that has a clear theoretical basis, is useful for understanding differences in reading motivation among children, and can be used to evaluate reading promotion interventions. Fourth, the definition and measurement of self-concept was based on the Progress in International Reading Literacy Study (PIRLS), which focuses explicitly on perceptions of competence. In this respect, this subscale has a rather limited number of items. This was opted for taking into consideration the young age of the participants and the already large amount of questions and test items to be completed. Further research could address more broad conceptualizations of self-concept (i.e., perceptions of competence in reading, perceptions of difficulty with reading, and attitude toward reading; Chapman & Tunmer, 1995). Fifth, we should be cautious when discussing the directions of effects in our models, as cross-sectional data were used. To explore and uncover possible causal relationships, future research should use a longitudinal design. Moreover, because prior behavior and performance were not measured in the present study, the reported direct effects of motivation could be partly due to the motivational variables capturing variance of prior reading behavior and performance. It would also be interesting in further research to relate the SRQ-Reading Motivation to other reading-related outcomes, such as reading strategy awareness and reading strategy use (e.g., Van Keer & Verhaeghe, 2005).

Conclusion

In today's society, being proficient in reading is an indispensable competence. Therefore, it is essential to establish a reading climate in which students are positively motivated to read and, hence, stimulated to read more frequently (Guthrie et al., 1999; Wigfield & Guthrie, 1997) and master important reading skills (Taboada et al., 2009; Van Elsäcker, 2002). In this respect, the present study aims to further the understanding of children's motivations for reading from a substantiated theoretical perspective (i.e., self-determination theory; SDT). SDT serves as the theoretical basis for the present study, as it is a prominent motivation theory that has demonstrated its value in the field of education (e.g., Reeve, 2002; Vansteenkiste et al., 2006) and language learning (e.g., Noels et al., 2000). However, its application in the context of reading motivation research and among elementary school children is still innovative.

The questionnaire developed in the present study (SRQ-Reading Motivation), based on the SDT, appears to be a reliable and valid questionnaire for measuring fifth-grade students' autonomous and controlled reading motivation, in both recreational and academic contexts. Its development is of theoretical and empirical significance, as the SRQ-Reading Motivation proves the relevance of SDT in the context of reading motivation research and among the age group of elementary school children. In addition, this questionnaire allows researchers and teachers to grasp individual dif-

ferences in students' reasons for reading, to follow students' evolution in reading motivation, and to evaluate reading promotion interventions.

Furthermore, SEM underlines the importance of reading motivation because qualitatively different reasons for reading (i.e., autonomous and controlled motivation) combine to explain reading behavior and performance above and beyond students' reading self-concept. Moreover, as expected, the significance of the quality of motivation (i.e., autonomous vs. controlled motivation) is corroborated, because recreational autonomous reading motivation, as compared to recreational controlled reading motivation, was associated with higher leisure-time reading frequency, more reading engagement, and better reading comprehension. This implies that interventions aiming at fostering reading motivation and, hence, breaking through the decline of reading motivation as children grow older should especially focus on enhancing autonomous reasons for reading, because autonomous reading motivation in particular leads to more qualitative reading behavior and better reading performance. In the academic setting only the equivalent relationship between reading motivation and leisure-time reading frequency could be corroborated. No confirmation of the indirect relationship between reading motivation and reading comprehension through reading frequency or reading engagement was found.

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Appendix

Items of the SRQ-Reading Motivation

Item	Recreational context	Academic context
Autonomous reading motivation		
	I read in my free time because . . .	I read for school because . . .
1	I really like it.	I really like it.
2	It's fun to read.	It's fun to read.
3	I enjoy reading.	I enjoy reading.
4	I think reading is fascinating.	I think reading is fascinating.
5	I think reading is challenging.	I think reading is challenging.
6	I think reading is interesting.	I think reading is interesting.
7	I think reading is meaningful.	I think reading is meaningful.
8	I think it is very useful for me to read.	I think it is very useful for me to read.
9	It is important to me to read.	It is important to me to read.
10	Reading is of great value to me.	Reading is of great value to me.
11	I want to learn new things.	I want to learn new things.
12	I can develop my talents through reading.	I can develop my talents through reading.
Controlled reading motivation		
	I read in my free time because . . .	I read for school because . . .
13	I will feel ashamed of myself if I don't read.	I will feel ashamed of myself if I don't read.
14	I don't want to disappoint others.	I don't want to disappoint others.
15	I will feel guilty if I don't do it.	I will feel guilty if I don't do it.
16	I have to prove myself that I can get good reading grades.	I have to prove myself that I can get good reading grades.
17	I want others to think I'm a good reader.	I want others to think I'm a good reader.
18	I just can be proud of myself if I get good reading grades.	I just can be proud of myself if I get good reading grades.
19	I will feel bad about myself if I don't do it.	I will feel bad about myself if I don't do it.
20	That is what others expect me to do.	That is what others expect me to do.
21	Others think that I have to.	Others think that I have to.
22	Others will only reward me if I read.	Others will only reward me if I read.
23	Others oblige me to do so.	Others oblige me to do so.
24	Others will punish me if I don't read.	Others will punish me if I don't read.

Note. Struck-through items were left out of the final instrument. SRQ = Self-Regulation Questionnaire.

Received February 7, 2011
Revision received February 6, 2012
Accepted February 23, 2012 ■